Why and How to Reduce the Uses of Herbicides?

Understanding the actual uses and recent trends in Herbicides uses

SITE: Annual survey carried out by ITB since 1997
- 500 farmers answers = 1500 fields every year
- Complete description of their practices at the field level
- Data analysis
- Variability and interactions

Possible tools for herbicides use reduction

- BETSY a web tool: Set up « recipes » aiming to determine best programs and mixtures adapted to complex of weeds and their stages
- Adapting the system to new herbicides available and regulation (Centium)
- Promoting the best « techniques » to the growers
- Optimising the spraying quality (volumes, nozzles, pressure, adjuvents...)
- Looking for possibles techniques during the intercrop, tillage, false sowing,
- Optimizing cropping system: beet frequency, previous crop,
- Mechanical complementary weed control

ECOPHYTO 2018: Implementation of 2009/128/CE in France

- The aim is to reduce by 50% the uses of PPP « if possible » before 10 years
- Measure year by year the use of PPP via “NODU” and “FTI”, which count the number of registered doses used at “national scale” (NODU) or at regional, farm or crop scale (FTI)
- Development: demonstrative farm network: 1 thousand of farms volunteered
- Research: INRA + Institutes: long term field trials « cropping system »
- Field monitoring: Warning network, « BSV » Resobet FongitIBT
One of the ITB orientations: Reduction of pre plant herbicides

Area with pre plant herbicides uses in France

Not effective per se to reduce uses

There is no longer any reduction in uses of herbicides

FTI in Sugar Beet in France national averages annual survey ITB Herbicides=50%

FTI among regions 2009

Small differences among regions
Annual survey: FTI variability in one region

FTI Picardie 2006

% surfaces % acreage by quartile

1er quartile 2e quartile 3e quartile 4e quartile

1.22 1.67 2.02 2.89

13/05/2011

IIRB Seminar 2011

Weed control strategies and FTI

5 types of strategies were identified: pre or not, number of post, doses, hoeing, ...

This diversity explains only 50% of FTI

Understanding the FTI diversity?

- The variability of FTI within a region is promising; what are the reasons for the variability?
- A fine analysis of the survey did’nt show up any technique that is more "economic" except perhaps "hoeing"
- No clear effect of cropping system, of tillage, of herbicides programs?
- A new tool to understand
  - VIGIBET, a field network (45 fields en 2010)
    - Evaluate at the field level the needs in herbicides and weed control, (and other PPP), ...
    - Is the use of herbicides and insecticides correct? Or not?
    - Build up new "decision rules" if possible
    - Understand the grower’s decisions…
**Vigibet : diagnosis of weed control techniques at the field level**

Started 2010 : 44 fields, weeds counting (species, stages..) when grower sprays, final weed control evaluation.

**Vigibet : some results**

<table>
<thead>
<tr>
<th>Types d'adventices</th>
<th>sans pré</th>
<th>avec pré</th>
<th>sans binage</th>
<th>avec binage</th>
<th>sans pré avec pré</th>
<th>avec pré sans binage</th>
<th>avec pré avec binage</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>23%</td>
<td>40%</td>
<td>14%</td>
<td>16%</td>
<td></td>
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</tbody>
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**Vigibet : diversity in number of weeds**

![Graph showing diversity in number of weeds](image1)

**Vigibet : annual variation among farms**

Farms were chosen within the 500 surveyed via SITE.
IFT expertise inférieur à IFT vigibet = 13 cas sur 26 = 50%
IFT expertise supérieur à IFT vigibet = 4 cas sur 26 = 15%
IFT expertise = IFT vigibet +/- 10% = 9 cas sur 26 = 35%

Understanding Grower’s decisions
During summer, discussion with each grower to determine his motivations for his decisions about weed control: how did he decide the herbicides, the doses, the spraying date...
In progress....

Mechanical weed control could/should be one important complementary tool to reduce herbicide uses...
Claude Muchembled